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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/496,794	02/02/00	MOORE	J MICT-0005-D1

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MM91/1017

EXAMINER

OWENS, D

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 10/17/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/496,794

Applicant(s)

MOORE ET AL.

Examiner

Douglas W Owens

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 August 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 26-31, 33 and 34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 26-31, 33 and 34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 26-31, 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over US patent No. 5,433,794 to Fazan et al.

Regarding claims 26-30, Fazan et al. teaches a semiconductor structure, comprising:

a support (1);

a first material (2) having a first etch rate;

a trench formed through the first material and into the support; and

a trench filler material (4) having an etch rate.

Fazan et al. teaches a pad oxide that is deposited on the substrate (Col. 2, lines 55-57) and a CVD, TEOS or similar filler material is used in the trench. Fazan et al. does not explicitly teach a trench filler material that has an etch rate that is similar to or less than that of the first material. Since Fazan et al. teaches that the pad oxide is deposited, one of ordinary skill in the art would have been left to choose a conventional method of depositing the pad oxide, such as CVD or TEOS. It is apparent that a CVD or TEOS first material would have had the same etch rate as that of a CVD or TEOS

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filler material. It would have been obvious to one of ordinary skill in the art to select CVD oxide or TEOS for the first material as a matter of design choice.

Regarding claim 31, Fazan et al. teaches semiconductor structure having a trench, comprising:

a trench filler (4) material; and

at least a portion of a second material (5) deposited on the trench filler material.

Fazan et al. does not explicitly teach performing an anneal of the second material. It is inherent that an anneal would have been performed on a portion of the second material during subsequent thermal processes.

Fazan et al. teaches a second material that comprises TEOS, CVD oxide or other materials. Fazan et al. does not explicitly teach a trench filler material that has an etch rate that is similar to or less than that of the first material. Fazan et al. teaches that the second material is deposited, using CVD or TEOS (Col. 3, lines 41-47). It is apparent that a CVD or TEOS first material would have had the same etch rate as that of a CVD or TEOS second material. It would have been obvious to one of ordinary skill in the art to select CVD oxide or TEOS since Fazan et al. teaches that either may be used.

Regarding claim 33, Fazan et al. teaches a semiconductor device, wherein the trench filler material and second material include silicon dioxide.

Regarding claim 34, Fazan et al. does not explicitly teach a second material that has a portion that is thermally grown. It is inherent that a portion of the second material would have grown during subsequent thermal processes.

Response to Arguments

3. Applicant's arguments filed August 2, 2001 have been fully considered but they are not persuasive.

The applicant argues that the etch rates of layers 3 and 4 are different because mask layer 3 is completely etched away in figures 5 and 6, while layer 4 remains. The examiner agrees that the etch rates layers 3 and 4 appear to be different. However, layers 2 and 4 in the same figures are not affected by the etch performed on layer 3. Layers 2 and 4 seem to have similar etch rates, particularly since they may comprise the same material. Additionally, the embodiment of figure 8 shows that second layer 5 remains on the structure.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas W Owens whose telephone number is 703-308-6167. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 703-308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

DWO
October 10, 2001

Steven Loke
Primary Examiner

